

REMARKS

The office action of January 21, 2005 has been reviewed and the examiner's comments carefully considered. A petition for three month extension of time accompanies this response. The examiners comments will be addressed in turn to assure a comprehensive response.

In paragraph 2 of the office action the examiner raised an objection to claim 27, as it was substantially similar to claim 8. The dependency of claim 27 has been amended in this reply to depend from claim 20 rather than claim 1 (as claim 8 does). This amendment should obviate this objection.

The examiner has rejected claims 1-68 under the doctrine of obvious type double patent in view of Pending U.S. Patent Number 10/664,860 taken in view of U.S. Patent 5,893,796 to Birang et al. (hereinafter the Birang patent). The examiner is thanked for the interview with the undersigned that clarified that this rejection is an obvious type double patenting rejection as opposed to the statutory type double patenting rejection suggested in paragraph 1 of the office action. The applicants appreciate the examiner comments that the claims of the associated pending patent application fails to teach or suggest the apertures or windows that are found in the claimed pad of the present invention. The examiner relies upon the Birang patent to suggest that the subject apertures and windows would have been obvious to one of ordinary skill in the art. The claim amendments and arguments discussed in connection with the other substantive rejections are believed to establish that the Briang patent (taken alone or in combination with other known prior art) neither teaches or suggests the aperture and window structure of the present claimed invention. Consequently the following arguments (and claim amendments) are therefore believed to avoid this obvious type double patenting rejection as well. Reconsideration of this rejection in light of the following amendments and comments is respectfully requested.

In paragraph numbers 2 and 3 on page 4 of the office action the examiner has rejected claims 37 and 38 due to informalities in the claim language. The dependencies of claims 37 and 38 have been amended to correct this informality. Specifically claims 37 and 38 now depend from claim 33 which defines the third layer of the polishing pad according to one aspect of the present invention. These amendments should address the issues raised by the examiner.

The examiner has rejected claim 68 as being anticipated by or, in the alternative, obvious in view of the teachings of the Birang patent. The examiner suggests that “the Birang patent discloses in fig. 3D a polishing pad with a first layer (22) having an opening (630), a second layer (20) with a partially transparent window (608) and a third layer (16) having an opening (30)...” The examiner further concludes that “it would have been obvious to attach the third layer to the second layer to prevent the aperture in the third layer from becoming misaligned...”

The examiner’s rejection of claim 68 is traversed for several distinct reasons. First, the present claimed invention as set forth in claim 68 is a polishing pad having at least three layers. In contrast, The Birang patent teaches a two layer pad 18 (layers 22 and 20), which is attached to a platen 16. Platen 16 is clearly not part of the polishing pad, but rather is part of the machine to which the pad is attached, as described in the Birang patent. Second, claim 68 defines that the third layer is softer than the first layer of the polishing pad of the invention as claimed in claim 68. The examiner fails to address this limitation, and the Birang patent fails to teach or suggest such a limitation. This pad feature of the present invention provides a more uniform contact of the working surface of the working surface of the first layer. As noted above, the Birang patent fails to teach or suggest a third layer, so it does not teach a third layer softer than the first layer. Further, even if the platen 16 were considered as a third layer of the pad (which it clearly is not), the platen will not be softer than the initial layer. Finally, with no third pad layer in the Birang patent, there is no suggestion for an opening in a third pad layer or for attaching such a layer to the second pad layer. Reconsideration of this rejection is respectfully requested for this reason.

The examiner has rejected claims 1-3, 11-14, 18 and 59-61 in view of the combined teachings of the Birang patent and U.S. Patent 6,585,574 to Lombardo et al. (Hereinafter the Lombardo patent). The Lombardo patent issued on July 1, 2003, and the applicant’s respectfully reserve the right to establish a date of invention prior to the effective date of the Lombardo patent. As discussed below the Lombardo patent is not believed to anticipate nor render obvious the subject matter of any of the claims of the present application, whether taken alone or in any combination with the remaining prior art of record, consequently the applicants hold the ability to establish an earlier date of invention in abeyance.

The Birang patent teaches a number of polishing pad alternatives, each of which has a transparent plug inserted into the pad to form a window. The transparent plug is intended to extend into the first layer 22 of the pad 18 as close as possible to the working surface 23. In the embodiment shown in figure 3d of the Birang patent, that the examiner relies upon, the “top surface 606 of the upper plug portion 602 is coplanar with the top surface 23 of the polishing pad 18” (column 6 lines 52-54). Figure 3a of the Birang patent illustrates a separate embodiment in which the plug or insert 38 is inserted into the pad 18 in a manner that “minimize the gap between the top surface of the insert and the surface of the wafer 14” being polished by the top surface of the pad 18. In contrast with the teachings of the Birang patent, the present claimed invention as set forth in claim 1 forms the window in the second layer of the pad in a manner that does not extend into the first layer. Claim 1 has been amended to clarify that the window is spaced from the top of the first layer by the thickness of the first layer. Support for this limitation can be found in the examples of the present invention in which the window is formed by the same material forming the second layer (with the adhesive removed). The prior art fails to teach or suggest this structure, with the Birang patent specifically teaching away from this construction. Claim 1, and claims 2-3, 13-14, 18-19 which depend there-from directly or indirectly, are believed to distinguish over the applied prior art for these reasons.

Claim 11 depends from claim 1 and distinguishes over the applied prior art for the reasons discussed above in connection with claim 1. Claim 11 has been amended to further define that the window does not include adhesive material. Support for this limitation can be found in the example in which the adhesive on the window is actively removed during pad construction. This is believed to further distinguish from plug that is glued into place. Claim 11, and claim 12 which depends there-from, are believed to distinguish over the applied prior art for these reasons.

Claim 19 is mentioned in the body of the rejection and not in the summary statement of the rejection. Should this rejection be maintained, then clarification of the status of claim 19 is requested.

Method claim 59 has been amended in a manner similar to claim 1 discussed above. Namely the claim, as amended, clarifies that the window is spaced from the working surface by the thickness of the first layer. This is in contrast to the teaching of the Birang patent which inserts a window forming plug into the first layer and intends to minimize the distance between the working surface of the pad and the

upper surface of the window. Claim 59 as amended distinguishes over the prior art of record.

Claim 60 depends from claim 59 and further defines the step of attaching the third layer to the second layer. The Birang patent fails to teach or suggest a third layer, such that it also fails to teach or suggest the attachment of a third layer of the pad to the second layer as further defined in claim 60.

Claim 61 depends from claim 59 and has been amended to further define the step of stripping the adhesive from at least one side of the window. Support for this limitation is found in the example, wherein the stripping of the adhesive on the windows is performed after the three layer pad has been formed. The step of stripping of the adhesive is particularly needed where the window is essentially formed by the material forming the second layer and the second layer material is manufactured with adhesive material on both sides thereof. The applied prior art fails to teach or suggest any similar step.

The examiner has rejected claims 4-5, 9-10, and 15-17 in view of the combined teachings of the Birang patent taken in view of the Lombardo patent taken further in view of U.S. Patent 5,212,910 to Breivogel et al. (Hereinafter the Breivogel patent). The Breivogel patent disclosed a three layer polishing pad structure in which at least the intermediate layer is segmented into independent laterally spaced elements. The examiner concludes that it would be obvious to one of ordinary skill in the art to “make the corresponding three layers of the Birang and Lombardo [patent] combination the same relative thickness as disclosed by” the Breivogel patent.

The examiner’s conclusions are respectfully traversed for the following reasons. First the Breivogel patent does not cure the deficiencies of the Birang and Lombardo patents discussed above in connection with claim 1, from which these claims depend. Further, there are no “corresponding layers” in either the Birang or Lombardo patents, which illustrate two and one layer pads, respectively. The examiner is sifting through the maze of prior art structures in an attempt to reconstruct the present claimed invention with no teaching or suggestion to do so, other than the applicants own specification.

The examiner has rejected claims 6-7 in view of the combined teachings of the Birang patent taken in view of the Lombardo patent taken further in view of U.S. Patent 5,257,478 to Hyde et al. (Hereinafter the Hyde patent). The Hyde patent disclosed a number of polishing pad designs including three layer polishing pad

structure shown in figure 8 in which the intermediate layer is formed as a thin film of incompressible material. The examiner concludes that it would be obvious to one of ordinary skill in the art to make the intermediate layer of the polishing pad from an incompressible material as taught by the Hyde patent.

The examiner's conclusions are respectfully traversed for the following reasons. First the Hyde patent does not cure the deficiencies of the Birang and Lombardo patents discussed above in connection with claim 1, from which these claims depend. Further, the examiner is continuing to use the applicants claimed invention as a blueprint for selectively reviewing and reconstructing the prior art. Every individual element of the applicants invention can be found somewhere in the prior art, as every invention is made up of existing nuts and bolts. It is the combination of these elements, and the claimed relationship that renders the claims patentable. Here there is no reasonable basis for selecting the thin film of figure 8 of the Hyde patent and attempting to incorporate this into the pad of either the Birang or Lombardo patents.

The examiner has rejected claims 8 and 27 in view of the combined teachings of the Birang patent taken in view of the Lombardo patent taken further in view of U.S. Patent 6,306,021 to Masumura et al. (Hereinafter the Masumura patent). The Masumura patent, similar to the Hyde patent discussed above, discloses a three layer polishing pad structure in which the intermediate layer is formed as a thin film of a hard plastic sheet. The examiner concludes that it would be obvious to one of ordinary skill in the art to make the intermediate layer of the polishing pad from a plastic sheet as taught by the Masumura patent. The examiner's conclusions are respectfully traversed with regard to claim 8 for the essentially the same reasons discussed above in connection with the rejection in view of the Hyde patent. First the Masumura patent does not cure the deficiencies of the Birang and Lombardo patents discussed above in connection with claim 1, from which these claims depend, and the examiner is continuing to use the applicants claimed invention as a blueprint for selectively reviewing and reconstructing the prior art. With regard to claim 27, this claim has been amended to depend from claim 20 and will be discussed again below.

The examiner has rejected claims 20-21, 30-33, 37, 38 and 62-62 in view of the combined teachings of the Birang patent taken in view of U.S. Patent 6,126,532 to Sevilla et al. (Hereinafter the Sevilla patent). The examiner relies upon the Sevilla patent to disclose a polishing pad with a porosity of between 25% and 50% by

volume. The Sevilla patent is no more relevant to the present invention than the Lombardo patent utilized by the examiner in the rejection of claims 1-19 and 59-61. The Sevilla patent discloses a one or two layer pad (the second layer arguably being a mylar film backing layer having adhesive layers on either side for attaching the pad to the platen). Claim 20 has been amended, similar to claim 1 to clarify that the window is spaced from the top of the first layer by the thickness of the first layer. In other words the window does not extend into the first layer and remains essentially recessed from the work surface by the thickness of the first layer. Support for this limitation can be found in the examples of the present invention in which the window is formed by the same material forming the second layer (with the adhesive removed). As discussed above, the prior art fails to teach or suggest this structure, with the Birang patent specifically teaching away from this construction. Claim 20, and claims 21 and 30-32 which depend there-from directly or indirectly, are believed to distinguish over the applied prior art for these reasons.

Claim 33 depends from claim 20 and further defines the third layer with an opening. As noted above the Birang patent fails to teach or suggest a third layer in the pad construction, nor a third layer with an opening as defined by the claims. The Sevilla patent also fails to teach or suggest a three layer pad construction, or an opening in such a third layer. The examiners statement that it would be obvious to attach the three layers by adhesive is not supported by the two and one layer pads of the applied prior art. Claim 33 is believed to distinguish over the applied prior art for these reasons.

Claims 37-38 have been amended to correctly depend from claim 33 to address informalities in the claim language as discussed above. Further these claims have been amended to define that the window itself is free from adhesive. Support for this limitation is found in the examples in which the adhesive is stripped from the portion of the second layer forming the window. The prior art simply does not teach or suggest any similar type of limitation. In the Birang patent the window must include adhesive to hold it in place as it is a separate plug member.

Method claim 62 has been amended in a manner similar to method claim 59 discussed above. Namely the claim, as amended, clarifies that the window is spaced from the working surface by the thickness of the first layer. This is in contrast to the teaching of the Birang patent which inserts a window forming plug into the first layer and intends to minimize the distance between the working surface of the pad and the

upper surface of the window. Claim 62 as amended distinguishes over the prior art of record.

Claim 63 depends from claim 62 and further defines the step of attaching the third layer to the second layer. The Birang patent fails to teach or suggest a third layer, such that it also fails to teach or suggest the attachment of a third layer of the pad to the second layer as further defined in claim 62. The Seville patent does not provide this teaching either.

Claim 64 depends from claim 62 and has been amended to further define the step of stripping the adhesive from at least one side of the window. Support for this limitation is found in the example, wherein the stripping of the adhesive on the windows is performed after the three layer pad has been formed. The step of stripping of the adhesive is particularly needed where the window is essentially formed by the material forming the second layer and the second layer material is manufactured with adhesive material on both sides thereof. The applied prior art fails to teach or suggest any similar step.

The examiner has rejected claim 22, which depends from claim 20 in view of the combined teachings of the Birang patent taken in view of the Sevilla patent and further in view of the Lombardo patent. The examiner relies upon the Lombardo patent for the desired material for the first layer of the claimed pad. The Lombardo patent does not cure the deficiencies of the Birang and Sevilla patents discussed above in connection with claim 20. Further, the rejection is a little unclear whether the first layer is being formed as disclosed in the Sevilla patent as suggested in the rejection of claim 20 or as taught by the Lombardo reference as now suggested by the examiner. The examiner is again selectively picking and choosing features of the prior art without considering the references as a whole.

The examiner has rejected claims 23, 24, 28, 29, 35 and 36 in view of the combined teachings of the Birang patent taken in view of the Sevilla patent taken further in view of the Breivogel patent. As discussed above the Breivogel patent discloses a three layer polishing pad structure in which at least the intermediate layer is segmented into independent laterally spaced elements. The examiner concludes that it would be obvious to one of ordinary skill in the art to “make the corresponding three layers of the Birang and Sevilla [patent] combination the same relative thickness as disclosed by” the Breivogel patent. The examiner’s conclusions are respectfully traversed for the following reasons. First the Breivogel patent does not cure the

deficiencies of the Birang and Sevilla patents discussed above in connection with claim 20, from which these claims depend. Further, there are no “corresponding layers” in either the Birang or Sevilla patents, which illustrate two and one layer pads. Claim 27 has been amended to correctly depend from claim 20 as discussed above. This claim is believed to further define the unique aspects of the present invention, in combination with the other claim elements, to further distinguish the present invention from any reasonable teaching or suggestion in the art.

The examiner has rejected claims 25 and 26 in view of the combined teachings of the Birang patent taken in view of the Sevilla patent taken further in view of the Hyde patent. As discussed above, the Hyde patent disclosed a number of polishing pad designs including three layer polishing pad structure shown in figure 8 in which the intermediate layer is formed as a thin film of incompressible material. The examiner concludes that it would be obvious to one of ordinary skill in the art to make the intermediate layer of the polishing pad from an incompressible material as taught by the Hyde patent. The examiner’s conclusions are respectfully traversed for the following reasons. First the Hyde patent does not cure the deficiencies of the Birang and Sevilla patents discussed above in connection with claim 20, from which these claims depend. Further, the examiner is continuing to use the applicants claimed invention as a blueprint for selectively reviewing and reconstructing the prior art. There is no reasonable basis for selecting the thin film of figure 8 of the Hyde patent and attempting to incorporate this into the two layer pad structures of either the Birang or Sevilla patents.

The examiner has rejected claims 39, 42, 44, 45, 47-50, 52-58 and 65-67 in view of the combined teachings of the Birang patent taken in view of the Hyde patent. The examiner now relies on the Hyde patent for a suggestion to one of ordinary skill in the art to combine with the teachings of the Birang patent to form the initial layer of the pad in the Birang patent as being more compressible than the second layer. Claim 39 has been amended similar to claim 1 above. Neither the Birang nor the Hyde patent teach or suggest the formation of the window in the second layer spaced from the upper surface by the entire thickness of the first layer. Claim 39, and claims 42, 44, 45, 47, 48, 49, 54-58 which depend there-from directly or indirectly, are believed to distinguish over the applied prior art for these reasons.

Claim 50 depends from claim 39 and further defines a third layer with an opening therein. The Hyde patent fails to teach a third layer with the associated

opening therein. Further the Birang patent, as discussed above fails to have a pad with a third layer. Claim 50 and claims 52-53 which depend there from are believed to further define the present invention over the prior art.

Method claim 65 has been amended in a manner similar to method claim 62 discussed above. Namely the claim, as amended, clarifies that the window is spaced from the working surface by the thickness of the first layer. This is in contrast to the teaching of the Birang patent which inserts a window forming plug into the first layer and intends to minimize the distance between the working surface of the pad and the upper surface of the window. Claim 65 as amended, and claim 66 which depends there from, distinguish over the prior art of record.

Claim 67 depends from claim 65 and has been amended to further define the step of stripping the adhesive from at least one side of the window. Support for this limitation is found in the example, wherein the stripping of the adhesive on the windows is performed after the three layer pad has been formed. The step of stripping of the adhesive is particularly needed where the window is essentially formed by the material forming the second layer and the second layer material is manufactured with adhesive material on both sides thereof. The applied prior art fails to teach or suggest any similar step.

The examiner has rejected claims 40 and 41 in view of the combined teachings of the Birang patent taken in view of the Hyde patent and further in view of U.S. Patent Publication 2001/0007810 to Moloney et al. (Hereinafter the Moloney publication). The examiner relies upon the Moloney publication to teach the specific compressibility ranges for the first layers. The Moloney publication fails to cure the deficiencies of the Birang and Hyde patents discussed above in connection with claim 39, from which claims 40 and 41 depend. Further, there appears to be no rational basis to pull this specific teaching out of the Moloney publication and incorporate this into the construction of the first layer of the Birang patent in combination with the compressibility teachings of the Hyde patent. The examiner continues to use the applicants claims as a blueprint for sifting through the prior art teachings.

The examiner has rejected claim 43 in view of the combined teachings of the Birang patent taken in view of the Hyde patent and further in view of the Lombardo patent. Here the examiner suggests that the material of the first layer is obvious from the Lombardo patent while the compressibility thereof is obvious from the Hyde patent. The applicants disagree with such a fanciful combination of the prior art.

Further, none of the references teach or suggest the claimed window configuration of independent claim 39 from which this claim depends.

The examiner has rejected claim 46 in view of the combined teachings of the Birang patent taken in view of the Hyde patent and further in view of the Masumura patent. Here the examiner suggests that the material of the second layer is obvious from the Masumura patent while the compressibility of the claimed layers is obvious from the Hyde patent. This seems to conflict with other applications of the Hyde patent used in earlier claims. It appears the examiner is suggesting that every possible combination of every element in the prior art would have been obvious to one of ordinary skill in the art. This is simply not true, and not supported by the reading of the references as a whole. The applicants continue to disagree with such a fanciful combination of the prior art. Further, none of the references teach or suggest the claimed window configuration of independent claim 39 from which this claim depends.

The examiner has rejected claim 51 in view of the combined teachings of the Birang patent taken in view of the Hyde patent and further in view of the Breivogel patent. Here the examiner suggests that the material of the third layer is obvious from the Breivogel patent. Again the applicants note that the Birang patent does not teach or suggest a third pad layer. Further there is no suggestion of a third pad with an opening in any of the prior art. Further, none of the references teach or suggest the claimed window configuration of independent claim 39 from which this claim depends.

The examiner is thanked for addressing all of the claims in detail. The applicant's amendments and comments are believed to have addressed all of the

issues raised by the examiner. Claims 1-68 remain in the application and favorable action on the claims in view of the above comments and/or amendments is respectfully requested.

Respectfully Submitted;

PPG Industries, Inc.

A handwritten signature in cursive script, reading "Carol Marmo", is written over a horizontal line.

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